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Calorimetric Study of Pr Ordering and Pr-O Hybridization in $(\text{Eu}_{1.5-x}\text{Pr}_x\text{Ce}_{0.5})\text{Sr}_2\text{Cu}_2\text{NbO}_{10}$. -- T. J. GOODWIN[a], H. B. RADOUSKY[b,a], R. N. SHELTON[a]. [a]Department of Physics, University of California, Davis; [b]Lawrence Livermore National Laboratory. --- We report low-temperature specific heat measurements (0.5 K - 30 K) of the $(\text{Eu}_{1.5-x}\text{Pr}_x\text{Ce}_{0.5})\text{Sr}_2\text{Cu}_2\text{NbO}_{10}$ (RCeSCNO) series of compounds for $x = 0, 0.1, 0.2, 0.4, 0.6, 0.9, 1.2$, and 1.5 . The specific heat is found to be comprised of contributions from the lattice, a hyperfine term, an enhanced linear term, and magnetic ordering of the Pr ions. The enhanced linear term is interpreted as evidence for Pr-O hybridization. The magnetic contributions are consistent with an ordering of Pr ions in the +3 valance with a singlet-ground state. From the peak in the magnetic specific heat, the ordering temperature is found to be 13 K for $x = 1.5$ and decreases in value with decreasing Pr concentration. Our results are compared to specific heat measurements of the $(\text{Y}_{1-x}\text{Pr}_x)\text{Ba}_2\text{Cu}_3\text{O}_7$ system, and the relevance of these new results to the suppression of superconductivity by the Pr ion in the

RCeSCNO structure will be discussed. This work was performed under the auspices of the U.S. Dept. of Energy at LLNL under contract no. W-7405-Eng-48.